

Atty. Dkt. No. 040356/0352

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Yuusuke MINAGAWA

Title: MOTOR/GENERATOR

Appl. No.: 09/758,131

Filing Date: January 12, 2001

Examiner: P. Cuevas

Art Unit: 2834

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REPLY AND AMENDMENT UNDER 37 CFR 1.116

Commissioner for Patents
Washington, D.C. 20231
BOX AF

Sir:

This communication is responsive to the Office Action dated May 31, 2002, concerning the above-referenced patent application.

Please amend the application as follows:

In the Claims:

Please amend claim 1. In accordance with 37 C.F.R. § 1.121(c)(ii), marked-up version(s) of the amended claim(s) are provided on separate sheet(s) at the end of this response under the heading of Marked-up Version(s) of Amended Claim(s).

1. (Twice Amended) A motor/generator comprising:
 - a first rotor provided with a plurality of magnetic poles by a magnet;
 - a second rotor provided with a plurality of magnetic poles by a magnet and a plurality of rotor coils, the first rotor and the second rotor being coaxially disposed and rotatable independent from each other; and

a stator provided with a plurality of stator coils which is configured to apply a first rotational force on the first rotor and a second rotational force on the second rotor to cause the first rotor and the second rotor to rotate independently from each other, when a composite polyphase alternating current is supplied to the stator coils.

REMARKS

The Office action dated May 31, 2002 has been carefully considered and this reply prepared in response. Reconsideration of claims 1 – 11 in the application is respectfully requested in view of the amendment above and the following remarks. Applicant notes with appreciation the Examiner's allowance of claims 12 – 14.

In the Office Action, claims 1 – 4 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,782,257 to Secher et al. in view of U.S. Patent No. 4,749,898 to Suzuki et al., claims 5 – 8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Secher in view of Suzuki and in further view of U.S. Patent No. 6,005,317 to Lamb, claims 9 and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Secher in view of Suzuki and in further view of U.S. Patent No. 5,124,606 to Eisenbeis, and claim 11 was rejected under 35 U.S.C. 103(a) as being unpatentable over Secher in view of Suzuki and in further view of U.S. Patent No. 5,117,141 to Hawsey et al. These rejections are traversed for the following reasons.

Claim 1 as amended recites structure not disclosed in the cited references

Claim 1 as amended recites structure that is not disclosed in the Secher and Suzuki references. In particular, claim 1 recites two rotors coaxially disposed and rotatable independent of each other.

As set forth in the Reply to the first Office Action dated March 19, 2002, Secher teaches that the rotors 4 and 5 are fixed to a common shaft 3, and so they physically cannot rotate independently from each other. Thus, Secher does not disclose the structure recited in claim 1 and, in disclosing rotors fixed to a common shaft, teaches away from allowing the rotors to rotate independently. This inadequacy of the Secher reference is not rectified by any of the Suzuki reference because, the Suzuki reference does not disclose a plurality of rotors coaxially disposed. As the expression "a plurality of eccentric shaft rotors" in

line 2 of its Abstract implies, the Suzuki reference teaches that the rotors are disposed eccentrically, not coaxially.

In contrast to Suzuki, the rotors recited in claim 1 do not perform a translational movement. Rather, claim 1 recites that the rotors are coaxially disposed so they rotate about a common axis, independently from each other or together according to the energizing state of the rotor coils.

Further, the device according to Suzuki provides for fine positioning of a surface by generating both translational and rotational movement of the output shaft in a two dimensional surface with three degrees of freedom. Thus, the Suzuki reference concerns a precision positioning device, which is very different in application and design from a motor/generator, and therefore, being non-analogous art, there would be no motivation to combine the multiple eccentric rotors disclosed in Suzuki with the motor/generator structure in Secher.

Because the cited references do not disclose, either alone or in combination, the above described structure recited in claim 1, and there would have been no motivation to combine the Secher and Suzuki references, Applicant respectfully considers that claim 1 is allowable over the cited references and, thus, in condition for allowance. Therefore, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested. Since claims 2 – 10 depend from claim 1, Applicant considers these claims to also be allowable, and withdrawal of the rejections under 35 U.S.C. 103(a) of claims 2 – 10 is respectfully requested. This comment also addresses the separate rejections of claims 9 and 10.

Claims 5-8 recite structure not disclosed in the cited references

In addition to being dependent from an allowable claim, claims 5-8 are allowable over the cited references because they further recite structure not

disclosed in the cited reference. Specifically, claims 5-7 recite application of a composite polyphase alternating current to the rotor coils.

In contrast, the disclosure of Secher et al. in line 34 of column 2 only specifies that the current may be a DC current or modulated current. There is no disclosure of a composite polyphase alternating current that can drive the first rotor and the second rotor independently. The composite polyphase alternating current, or use thereof for driving two rotors independently, is also not disclosed by Suzuki et al. This missing structure is not cured by the disclosure in Lamb, which is limited to a magnetic coupler for coupling the rotation of two shafts, and thus is non-analogous to motor/generators. In particular, Lamb does not disclose a plurality of pairs of the motor/generator rotor coils, any motor/generator functions of the coupling, or supplying a composite polyphase alternating current to the stator coils.

Because the cited references do not disclose, either alone or in any combination, the above described structure recited in claims 5-8, Applicant respectfully considers these claims are allowable over the cited references and in condition for allowance. Therefore, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

Claim 11 recites structure not disclosed in the cited references

Similar to claims 1 and 5-8, claim 11 recites that the first and second rotors rotate independently from each other in response to a composite polyphase alternating current supplied to the stator coils. As explained in the Reply to the first office action, Secher teaches that the rotors 4 and 5 are fixed to a common shaft 3, so they physically cannot rotate independently from each other. Thus, Secher does not disclose the structure recited in claim 11 and, in disclosing rotors fixed to a common shaft, teaches away from allowing the rotors to rotate independently. This inadequacy of the Secher reference is not rectified by the Suzuki reference as discussed more fully above. Further, Secher

and Suzuki do not teach use of a composite polyphase alternating current supplied to the stator coils. These structural differences are not overcome by the Hawsey reference which is limited to a brushless DC motor with permanent magnets.

Because the cited references do not teach or suggest first and second rotors rotatable independent of each other, either alone or in combination, or application of a composite polyphase alternating current to the stator coils, Applicant respectfully considers claim 11 is allowable and withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

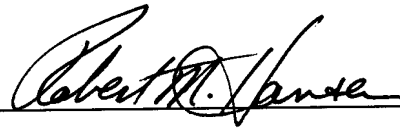
Conclusion

Base upon the reasons provided above, Applicant considers the application to be in condition for allowance and a favorable reconsideration of the application is requested.

Respectfully submitted,

Date September 3, 2002

By



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